

disease and medical expenses of the metabolic syndrome are higher than that of non metabolic syndrome.

PHP24**TRENDS OF PATIENT COSTS PER CASE IN ALBERTA,****CANADA**

Thanh NX

Institute of Health Economics, Edmonton, AB, Canada

OBJECTIVES: This paper describes the trends of costs per case for both inpatients and outpatients in Alberta, Canada from February 2001 to May 2004. **METHODS:** Data on length of stay, direct costs, indirect costs, average costs per case and number of cases studied by the 478 Case Mix Groups with 4 complexity levels (for inpatients) and 430 groups of the Ambulatory Care Classification Systems (for outpatients) were retrieved from the annual reports of health costing in Alberta. **RESULTS:** During the studied period, direct costs of medical services considerably increased while overhead costs for administrative services, human resources, IT, maintenance, registration, records and food services slightly increased thereby lowering the share of indirect costs from 26% in February 2001 to 21% in May 2004 for both inpatients and outpatients. On average, the average costs per case yearly increased by 10.5% for outpatients and 8.2%, 10.5%, 8.9% and 10.9% for inpatients with complexity levels of 1, 2, 3, and 4, respectively. The results also showed that average length of stay per inpatient case over this period of time increased in all complexity levels, indicating that not only price of health services but also the quantity of health services increased. Driven factors of the increase in price of health services could be medical price inflation, growth in intensity of health services, and growth in defensive medicine which could also contribute to the increase in quantity of health services. However, these need further investigations. **CONCLUSION:** In conclusion, the increasing trend of patient costs per case from February 2001 to May 2004 is one of the evidences explaining the skyrocketing growth of overall health care costs in the province of Alberta, Canada during the same time period.

PHP25**MEDICATION ADHERENCE IN POST-TRANSPLANT IMMUNOSUPPRESSION: THE ECONOMIC IMPACT OF DRUG-REGIMEN COMPLEXITY**

Hansen R¹, Seifeldin R², Noe LL¹

¹ICON Lifecycle Sciences Group, San Francisco, CA, USA, ²Astellas Pharma US, Inc, Deerfield, IL, USA

OBJECTIVES: The purpose of this analysis was to review medication adherence issues among patients with chronic disease and among solid-organ-transplant recipients to elucidate the clinical and economic impact of nonadherence and to explore the potential impact of reducing drug-regimen complexity on adherence and outcomes. **METHODS:** We conducted a targeted literature review to outline adherence rates and to summarize the clinical and economic outcomes of nonadherence, for both chronic-disease patients and patients receiving post-transplant immunosuppression. The impact of dosing complexity on adherence rates was also reviewed. **RESULTS:** Typical adherence rates among chronic-disease patients are approximately 50%, and these low adherence rates have an estimated economic impact of \$100–300 billion annually in the US. Among adult renal transplant recipients in the US, the median rate of nonadherence is 22%; it is associated with an estimated 903 acute rejection episodes, 1319 graft losses (36% of transplant failures), and costs approaching \$115 million annually. An inverse relationship exists between dosing frequency and adherence in various chronic diseases, with

once-daily dosing resulting in the highest adherence rates. Reducing drug regimen complexity may positively impact clinical and patient-reported outcomes, as well as health care costs. Overall costs are reduced when the costs of less frequently administered drugs are outweighed by the savings achieved through improved adherence rates and better health outcomes. **CONCLUSION:** If trends among patients with chronic diseases apply, once-daily dosing regimens may improve adherence rates by approximately 6–14% among renal transplant patients and could substantially reduce the number and costs of acute rejection episodes and graft failures. Further research is needed to determine the exact clinical and economic impact of these regimens.

PHP26**THE EFFECT OF INJURY SEVERITY AND TRAUMA CENTER DESIGNATION ON INPATIENT COSTS AND OUTCOMES IN HOSPITAL ADMISSIONS FOR TRAUMATIC INJURY IN THE UNITED STATES**

Davis KL¹, Candrilli SD¹, Mitra D¹, Tortella BJ², Joshi AV²

¹RTI Health Solutions, Research Triangle Park, NC, USA,

²Novo Nordisk Inc, Princeton, NJ, USA

OBJECTIVES: To generate national estimates of the effect of injury severity and admitting facilities' trauma center designation on inpatient costs, length of stay (LOS), and probability of death in hospital admissions for traumatic injury in the US. **METHODS:** Discharge data from the 2002 HCUP Nationwide Inpatient Sample were analyzed for 54,370 admissions (weighted N = 267,306) to US trauma centers for blunt or penetrating traumatic injury. Data on admitting facilities' trauma center designation (Level I, II, or III/IV) were obtained from the American Hospital Association. For each admission, injury severity was calculated using the ICDMAP90 software. Regression analyses were used to estimate the incremental effect of injury severity and admitting facilities' trauma level on inpatient costs, LOS, and probability of death, controlling for injury type and other patient characteristics. **RESULTS:** Relative to critical injuries (ISS = 25+), low severity (ISS = 0–9), moderate severity (ISS = 10–15) and severe (ISS = 16–24) injuries were associated with substantially decreased costs (–\$7467, –\$6592, and –\$5537, respectively; all P < 0.0001), LOS (–9.7, –8.3, and –5.3 days, respectively; all P < 0.0001), and probability of death (odds ratios = 0.032, 0.046, and 0.077, respectively; all P < 0.0001). Relative to Level I trauma centers, Level II and Level III/IV centers were associated with lower costs (–\$3407 [P = 0.0051] and –\$4454 [P < 0.0001], respectively), LOS (–0.6 [P = 0.0505] and –1.8 [P < 0.0001] days, respectively), and probability of death (odds ratios = 0.818 [P = 0.0090] and 0.732 [P = 0.0515], respectively). **CONCLUSION:** To our knowledge, this is the first study to quantify the incremental effect of injury severity and admitting facilities' trauma center designation on inpatient costs, LOS, and probability of death in a representative multi-payer US population. Higher injury severity, as well as admission to more specialized trauma centers, was associated with increased costs, LOS, and probability of death. Results of this study may help health care decision makers more efficiently allocate resources for treatment of traumatic injuries.

PHP27**A NEW REGRESSION MODEL AND QUALITY PERFORMANCE ADJUSTMENT IN PHYSICIAN ECONOMIC PROFILING**

Zhao Y¹, Robinson M¹, Légorreta AP², Gilmore A¹

¹Health Benchmarks, Inc, Woodland Hills, CA, USA, ²UCLA School of Public Health, Woodland Hills, CA, USA

OBJECTIVES: We previously reported a regression approach designed to improve the predictive accuracy of risk adjustment

modeling in cost-based physician profiling. Here, we examine a refined modeling approach and the use of physician quality score. **METHODS:** Symmetry's Episode Treatment Groups (ETG)TM software was employed to group 2 years of commercial claims for 1 million members and 6,000 physicians into episodes. Our previous method used more than 200 ETG-level Gamma regressions to generate expected costs for each care episode, which were then used to calculate the standardized cost difference (SCD) in an effort to characterize physician practice efficiency. In this approach, we refined our method by conducting one Gamma regression model for all episodes across all ETG types, which enabled us to estimate physicians' relative performance more consistently and efficiently based on the inclusion of physician-specific intercepts. Regression models controlled for patient demographic, health status, and disease severity characteristics as well as physician quality score to control for the marginal cost incurred for the provision of evidence-based care (i.e., tests, screenings). The weighted kappa score was calculated to assess agreement between the two approaches. **RESULTS:** The weighted kappa between physician rankings from the intercept model and SCD approach was 0.90, suggesting that the two methods generated similar physician practice efficiency scores. Physician quality played a significant role across all specialties (higher quality was associated with 12% higher cost, p -value < 0.0001), but differed with regard to certain specialties (higher quality was associated with 15% lower costs for internal medicine, p -value = 0.003), which could have been indicative of downstream costs that were avoided due to improved quality of care. **CONCLUSION:** A regression approach with physician-specific intercepts that controls for a comprehensive set of patient factors and physician quality score produces more consistent and efficient estimates of physician cost and is more congruent with the goals of quality measurement.

PHP28

DEVELOPMENT OF THE CAT-HEALTH SYSTEM: THE FIRST COMPUTER-ADAPTIVE TESTING SYSTEM IN SPAIN FOR EVALUATING THE HEALTH RELATED QUALITY OF LIFE OF ILL OR HEALTHY GENERAL POPULATION SUBJECTS

Rebollo P¹, García-Cueto E², Cuervo J¹, Zardain PC¹, Martínez I¹, Muñiz J²

¹BAP Health Outcomes Research, Oviedo, Asturias, Spain, ²Oviedo University, Oviedo, Spain

OBJECTIVES: Computer Adaptive Testing (CAT) are assessment instruments based on the Item Response Theory. CAT use a reduced number of questions (selected from a calibrate item-bank) in evaluating the subject with a minimum error. These are characteristics which would be very useful in the Health-Related Quality of Life-HRQoL area. The purpose of the present work was to develop a calibrated bank of HRQoL items to use it in the to construction of a CAT for evaluating the generic HRQoL in our country: the CAT-Health. **METHODS:** HRQoL was considered as an unidimensional construct. An expert panel constructed the item bank with items from validated HRQoL questionnaires and original ones, all with a likert scale of five alternatives. A pilot group was interviewed with all these items to evaluate parameters of Classic and Item Response Theories and select the anchoring items. A normative group answered part of the items (through a computer application or in paper) and items were re-calibrated (using Samejima's Graded Response Model-GRM) and norms of item selection were designed. Various simulation studies were carried-out with the final calibrated bank of HRQoL items. **RESULTS:** Experts panel constructed a bank of 140 HRQoL items. Pilot group ($N = 185$) answered all the items: 12 items were eliminated because homogeneity coefficient was

under 0.20; Cronbach's alpha was 0.99; factorial analysis confirmed the uni-dimensionality of the item bank; IRT showed that 23 items had a "b" parameter which did not fit the model (eliminated). Normative group ($N = 1,373$) answered 10 different questionnaires (5 anchoring items and 10 different) constructed with the 105 items remaining in the bank: Information function indicated that 9 items must be eliminated; GRM was applied to re-calibrate the items. Finally, norms of item selection were designed and simulations were carried-out. **CONCLUSION:** A new CAT to evaluate generic HRQoL has been developed and tested through simulation techniques.

PHP29

THE RELATIONSHIP BETWEEN PHYSICIAN EMPATHY AND SATISFACTION WITH PRIMARY CARE PHYSICIANS: FINDINGS FROM AN INTERNET BASED SURVEY

Uhas AA¹, Feldman SR², Balkrishnan R¹

¹The Ohio State University College of Pharmacy, Columbus, OH, USA, ²Wake Forest University School of Medicine, Winston Salem, NC, USA

OBJECTIVES: This study examined patient's satisfaction with their physician. Patient satisfaction is a quality measure that affects treatment outcomes. More specifically it examines how perceived patients' perceptions of empathy from a physician affect patient satisfaction. **METHODS:** A cross-sectional Internet-based survey completed by patients visiting primary care physician offices resulted in a convenience sample of 20,901 patient respondents who rated their recent visit to a physician through a web-based survey. The survey included questions based on aspects of overall satisfaction with the physician care and office practice and more detailed items including demographics such as "friendliness", empathy and time spent with doctor as well as areas that could be improved. These scales were then used to represent patient satisfaction. How "friendliness and caring" the physician was perceived to be was used as a measure of perceived empathy. **RESULTS:** Of the 20,901 patients surveyed from the online survey perceived empathy was the most strongly predominant correlate associated with patient satisfaction with their physician was that of empathy with a partial correlation of 0.87 ($p < 0.001$) and a Pearson correlation of 0.92 ($p < 0.001$). Patient satisfaction with the office setting was also highly correlated with empathy scores with a partial correlation of 0.72 ($p < 0.001$) and a Pearson correlation of 0.83 ($p < 0.001$). Other factors such as waiting time and problems with appointments, staff, records, parking doctor care, and ways of obtaining information also played a role in how the patients' perceived their overall satisfaction with the physician. **CONCLUSION:** The patient satisfaction ratings are strongly correlated to patient perception of empathy.

PHP30

HEALTH OUTCOMES AMONG INDIVIDUALS WITH AND WITHOUT HEALTH INSURANCE IN THE UNITED KINGDOM: RESULTS OF A MATCHED SAMPLE ANALYSIS OF A RETROSPECTIVE DATABASE

Bolge SC, Kannan H

Consumer Health Sciences, Princeton, NJ, USA

OBJECTIVES: To identify and describe differences in demographics, quality of life, resource utilization, and health status between those with and without private health insurance in the UK. **METHODS:** Data for this analysis were obtained from the 2006 National Health and Wellness Survey (NHWS), an annual nationally representative Internet-based study of the health status, health care attitudes, behaviors, and outcomes of adults